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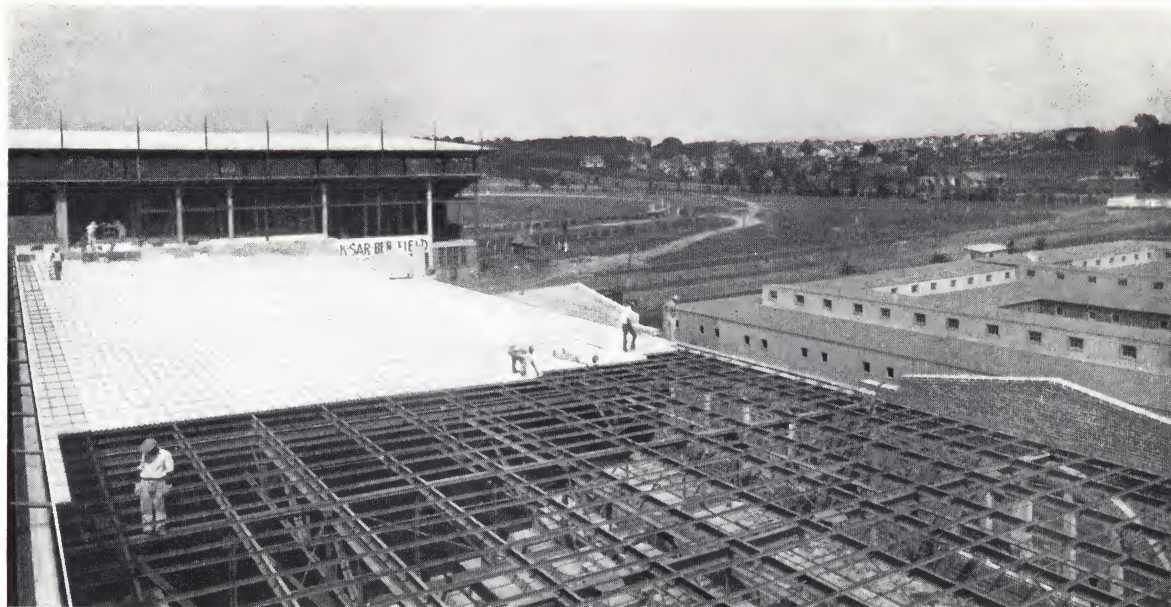
PYROBAR GYPSUM SHORT SPAN ROOF TILE



UNITED STATES GYPSUM COMPANY



SPAN ROOF TILE



USG PYROBAR GYPSUM SHORT SPAN ROOF TILE

The United States Gypsum Company's Pyrobar Gypsum Short Span Roof Tile System is a construction using pre-cast gypsum units, 30" long, supported by sub-purlins, which are in turn clipped or welded to the main roof purlins.

These pre-cast Pyrobar gypsum tile, made in relatively small units, are an ideal fireproof nailing deck for ornamental roof coverings. Such roofs usually involve steep pitches, hips, valleys, and dormers which require the flexibility of short span units. The Solid Tile have excellent nail-holding power. They are thus admirably suited to dormitories, schools, public buildings, memorial buildings, private residences and similar structures.

The Short Span gypsum units are exceptionally strong, provide good heat insulation and light reflection and therefore make

an excellent type of roof construction for industrial buildings such as factories and warehouses.

This type of construction is particularly well suited for roofing work as it can be installed immediately behind removal of the old deck with practically no interruption of plant operations or exposure of building contents to the weather.

DESCRIPTION—Pyrobar Gypsum Short Span Roof Tile are made in both solid and hollow units. The solid type tile are 3x12x30 inches. The hollow type are furnished in standard sizes of 3x12x30 inches and 4x12x30 inches.

All units except the 3" Hollow are reinforced with an electrically welded, galvanized steel mat so designed as to afford top

*Reg. Trade-Mark.

neg. Trade-Mark

TEE SIZES AND ALLOWABLE SPANS				Sizes and Weights of Pyrobar Gypsum Short-Span Roof Tile
Based on 50 Lbs per Sq. Ft. Total Roof Load Tees Spaced 2'-6¾" C. to C. M = 1/10 WL				
Size of Tee Weight per Foot	Allowable Span		Wt. of Tees Lbs. per Sq. Ft. of Roof	
	18,000 lbs. Per Sq. In. Stress	20,000 lbs. Per Sq. In. Stress		
No. 218 U.S.G. 2.77 LB. BULB TEE	7'-5"	7'-10"	1.08	3"x12"x30" Solid Tile Wt. 17 Lbs. per Sq. Ft. 3"x12"x30". Hollow Tile Wt. 12½ Lbs. per Sq. Ft. 4"x12"x30" Hollow Tile Wt. 15 Lbs. per Sq. Ft. NOTE: Add Weight of Tees to Weight of Tile to Secure Weight of Roof Deck.
2½"x2½" 5.5 LBS.	7'-8"	8'-1"	2.15	
2½"x3" 6.1 LBS.	9'-2"	9'-8"	2.4	
3"x3" 6.7 LBS.	9'-4"	9'-10"	2.61	

and bottom reinforcing and so formed as to insure accurate location of the mat. The 3" Hollow tile are reinforced with two $\frac{3}{8}$ " cold rolled channels. In addition, there are two No. 8 wires mechanically secured to the channels at each end to serve as lateral-tie reinforcement which provide end anchorage for the channels. The channels are rigidly held in place by means of special devices on the moulds insuring accurate positioning of the reinforcing.

USES—The solid tile are ideal for the ornamental type of roof where a pre-cast, fireproof unit of great flexibility and good nail holding power is desired. The solid tile are also well adapted to industrial buildings, both for flat and for pitched roofs. Where lighter weight and greater insulation are desired, the hollow tile are suggested. The 4" hollow tile afford better heat insulation with some saving in weight, while the 3" hollow tile permit a further saving in weight and in cost. Hollow tile are only recommended for roofs where a built-up roof covering is to be used. They are satisfactory for the nailing required for the application of built-up roof covering, but hollow tile are not recommended as a nailing base for ornamental or slate roof covering.

SUB-PURLINS—USG engineers, recognizing the need for a more efficient and economical tee section, have developed the USG Bulb Tee Sections. These special, patented sections have greater strength and greater bearing surface for the tile than standard tees of equal sectional area and weight.

NAILING—Ordinary Built-up Roof covering is applied in accordance with standard practise.

Where slate or ornamental tile roofings are to be nailed directly to the deck (3" solid tile), square-cut nails having

not less than 2" penetration into the gypsum should be used. When heavy roofings are to be applied on very steep slopes, they should be fastened by bolting through the slab or nailed to wood grounds which are, in turn, secured directly to the roof deck. Because of the great expansion of sheet metal, this type of roofing requires thoroughly rigid fastening and the metal cleats used for such purpose should be spaced not over 8" on centers and secured with two nails each.

HEAT INSULATION—Gypsum is among the highest in insulating value of the fireproof structural building materials. The under-surface of the gypsum roof remains at practically the same temperature as the interior of the building, regardless of outside temperature. This naturally means a saving in fuel bills, and makes possible very uniform room temperatures and better working conditions both summer and winter.

The table below contrasts the B.T.U. loss per hour, per square foot, per degree difference in temperature of several types of decks:

Corrugated Sheet Iron	1.50
Cement Tile 1 $\frac{5}{8}$ " thick68
Stone Concrete 3" thick61
Pine Plank 2" thick34
Pyrobar Short Span Tile 3" solid43
Pyrobar Short Span Tile 3" hollow39
Pyrobar Short Span Tile 4" hollow35

MAINTENANCE—Since gypsum is inert and no progressive corrosion of the reinforcement takes place, the maintenance cost is practically nothing.

*Below — Erecting Pyrobar Gypsum Short Span Roof Tile on dormitory building, Durham, N. C.
Architect, Horace Trumbauer*

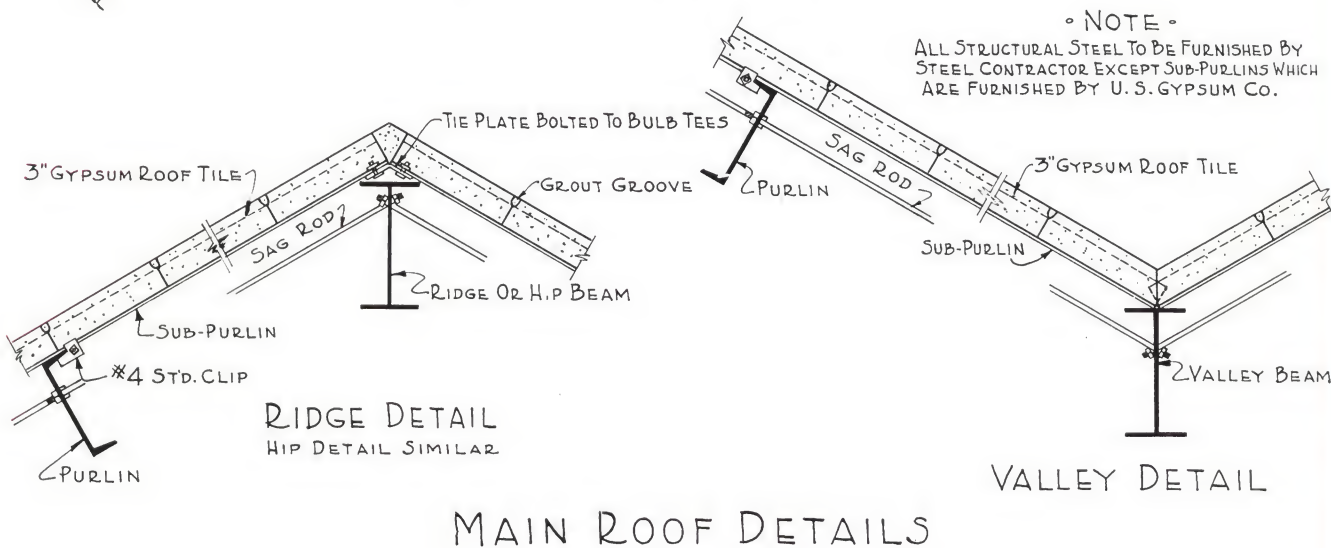
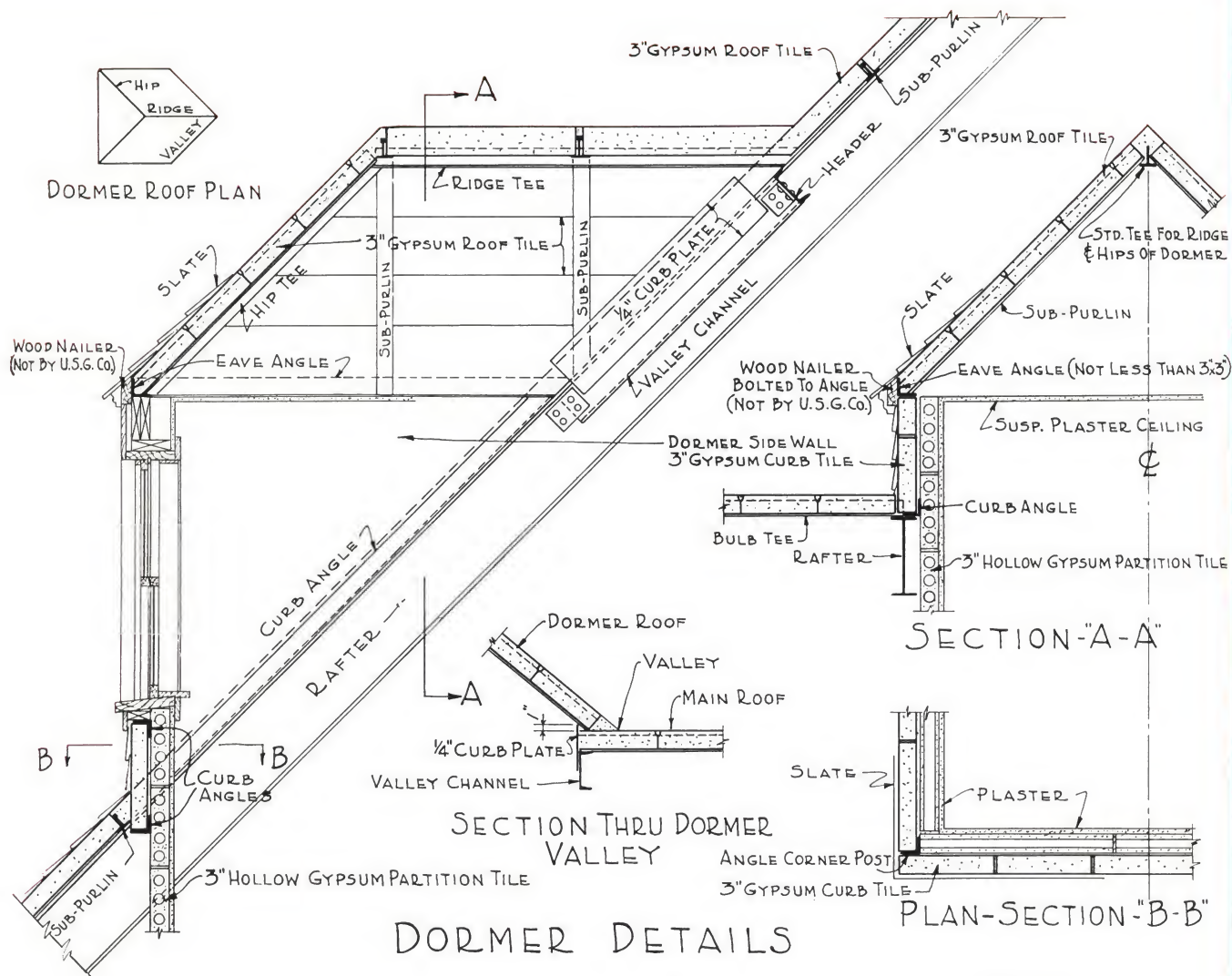


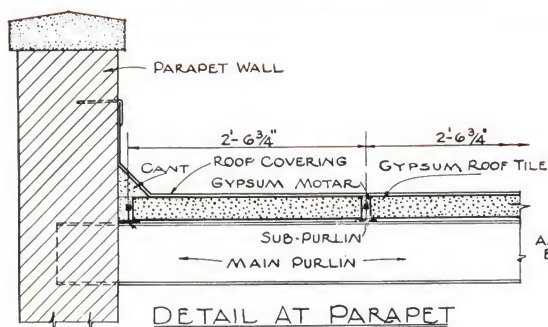
*Below — Pyrobar Gypsum Short Span Roof Tile on Park Building, Monroe, Michigan.
Architects, H. F. Howe — W. G. Morris, Detroit, Mich.*

Above—Method of erecting Pyrobar short span Gypsum Roof Tile on flat roofs.

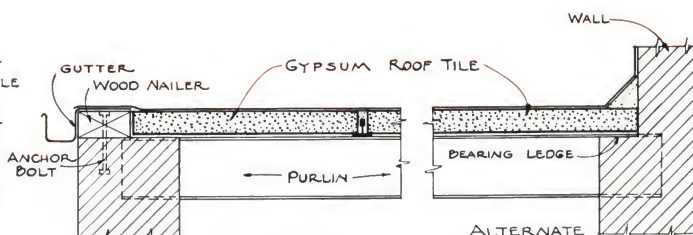


DETAILS OF PYROBAR SHORT SPAN ROOF TILE



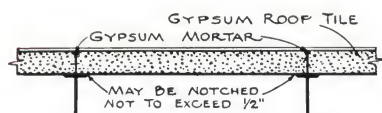


DETAIL AT PARAPET WALL

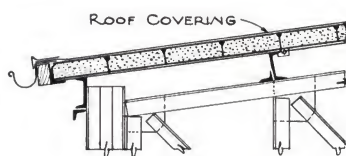


EAVE WALL DETAIL

ALTERNATE DETAIL AT PARAPET WALL



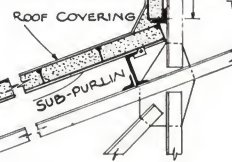
DETAIL SHOWING USE OF LIGHT JOISTS IN PLACE OF SUB-PURLINS



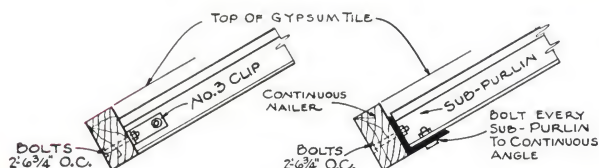
EAVE DETAIL

CONTINUOUS CHANNEL 4" OR LARGER OR TWO ANGLES WITH MINIMUM DISTANCE BETWEEN INSIDE FACES OF 3 3/8"

1'-0 1/2" SPACE FOR STANDARD TILE

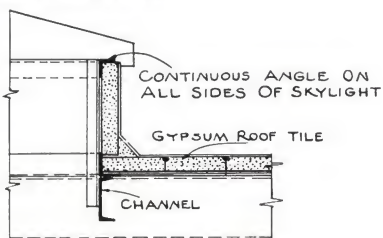
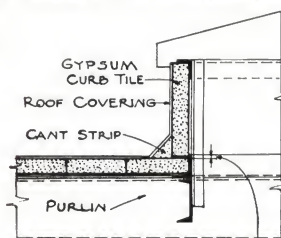
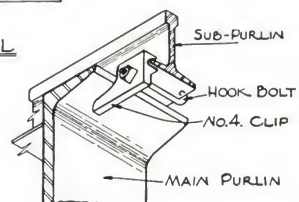


MONITOR CURB DETAIL

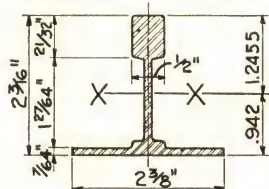


EAVE DETAIL

EAVE CONSTRUCTION DETAILS



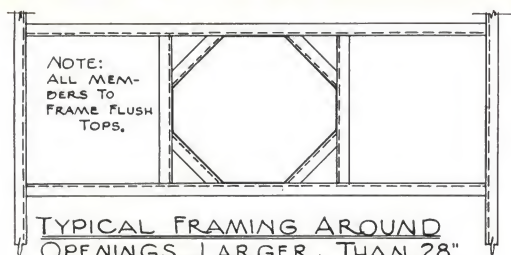
CURB DETAIL SKYLIGHTS-VENTILATORS-ETC.



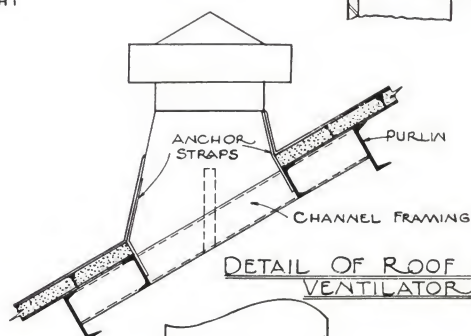
N° 218 USG. BULB TEE

PROPERTIES
WEIGHT=8.31 LB. PER YD.
I. X-X = .588 IN.⁴
S. X-X = .47 IN.³

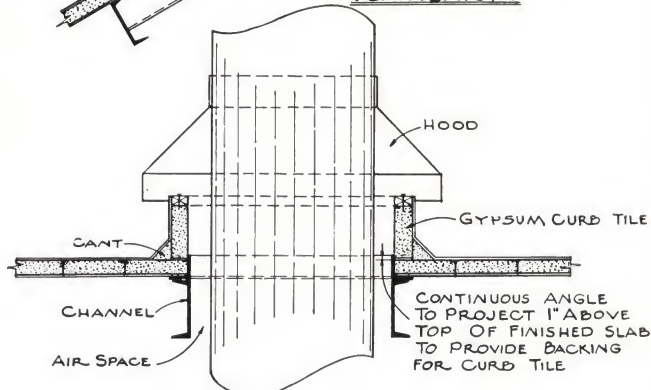
NEUTRAL AXIS



TYPICAL FRAMING AROUND OPENINGS LARGER THAN 28"
OPENINGS LESS THAN 28" TO BE FRAMED WITH BULB TEES



DETAIL OF ROOF AT VENTILATOR



TYPICAL DETAIL AROUND OPENINGS EXTENDING THROUGH ROOF

MASTER SPECIFICATIONS PYROBAR GYPSUM SHORT SPAN ROOF TILE

(1) WORK INCLUDED

NOTE—Here list the various roof areas to be constructed of Pyrobar Precast Roof Tile and specify the prescribed live load. If more than one type of tile is used, list separately the areas constructed of each.

(2) MATERIALS

(2a) **SHORT SPAN TILE**—Where so designated, the roof slab shall be constructed of Pyrobar Gypsum Short Span Roof Tile (3x12x30 in. Solid) (3x18x36 in. Solid) (4x12x30 in. Hollow) accurately laid, without mortar, upon the supporting steel with full bearing and with tile units laid tight. All joints on top surface shall be filled with gypsum mortar and the roof left smooth and true, ready for the application of the waterproof roof covering.

(2b) **SPECIAL UNITED STATES GYPSUM BULB TEE SUB-PURLINS**—All sub-purlins shall be special United States Gypsum Bulb Tees, with a shop coat of light grey paint.

(2c) **CURB TILE, END WALLS, ETC.**—Where so indicated on the plans, curbs and end walls shall be constructed with 3 inch Solid Pyrobar Gypsum Curb Tile set in gypsum mortar.

(2d) **GYPSUM MORTAR**—Gypsum mortar shall consist of one part of unfibred gypsum cement plaster and not to exceed two parts of clean, sharp sand. Mix to the proper consistency in a clean mortar box with clean water.

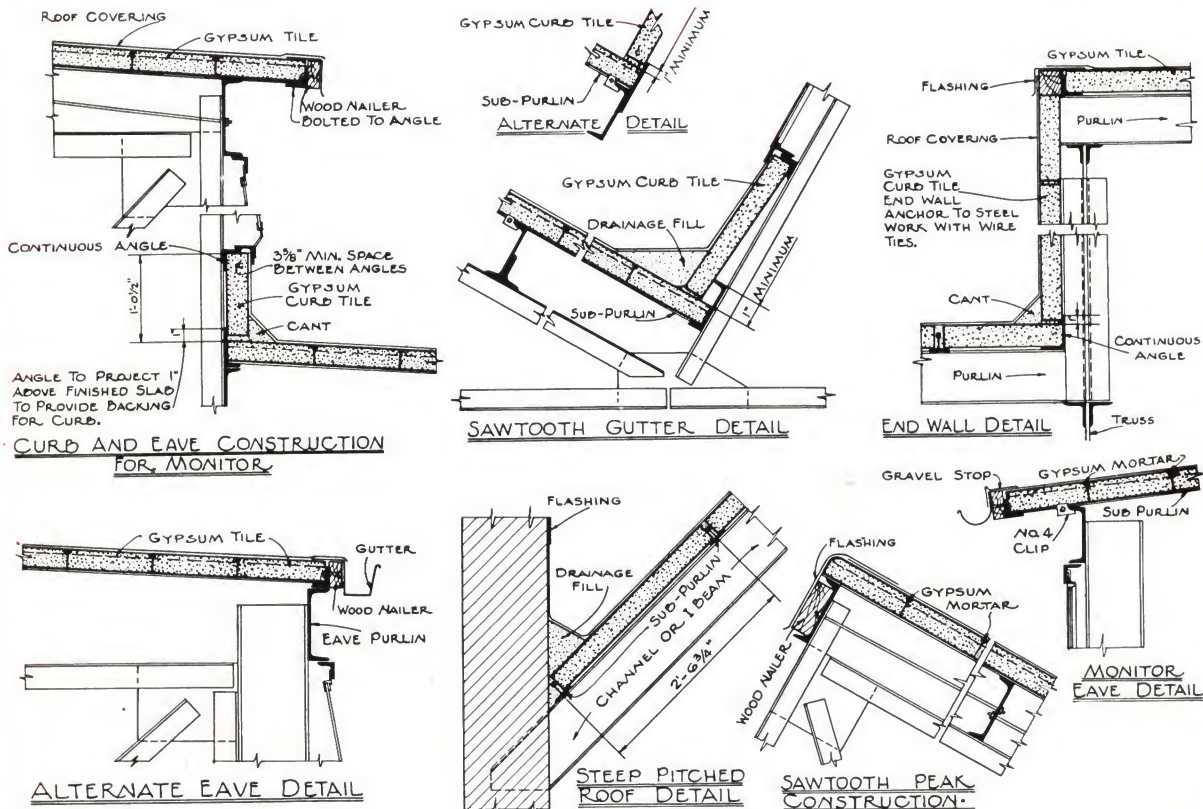
(2e) **SADDLES AND DRAINAGE FILL**—Saddles and Drainage Fill shall be constructed of Pyrofill (Gypsum Fiber Concrete) consisting of calcined gypsum and 12½ lbs. of clean soft wood fiber to 87½ lbs. of gypsum and sufficient clean water for proper consistency.

(3) ERECTION

(3a) **BY UNITED STATES GYPSUM COMPANY**—All Pyrobar Gypsum Roof Tile Construction including the sub-purlins shall be completely erected by the Engineering Sales Division of the United States Gypsum Company or one of its authorized erectors.

(4) WATERPROOF ROOF COVERING

NOTE—Provide in the Roofing and Sheet Metal division of the specifications that the waterproof roof covering shall be applied as soon as possible after the gypsum roof slab is erected (preferably within twenty days).



U.S.

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